

CLAIMS

1. A process for fabricating a microstructure containing a vacuum cavity, characterized in that it
5 comprises the following steps that consist in:

a) producing, in the thickness of a first silicon wafer, a porous silicon region intended to form, completely or partly, one wall of the cavity and capable of absorbing residual gases in the cavity;

10 b) joining the first silicon wafer to a second wafer, so as to produce the cavity.

2. The process as claimed in the preceding claim, characterized in that step a) furthermore includes a
15 step consisting in impregnating the porous silicon region with another material that can also absorb residual gases in the cavity.

3. The process as claimed in either of the preceding
20 claims, characterized in that, when the cavity has a predetermined height, the joining operation of step b) is carried out by means of an intermediate wafer whose thickness contributes to the height of the cavity.

25 4. The process as claimed in any one of the preceding claims, characterized in that, prior to step b), it includes a step consisting in carrying out a physico-chemical preparation of the surfaces of the wafers used in step b).

30 5. The process as claimed in any one of the preceding claims, characterized in that, prior to step b), it includes a step consisting in outgasing the wafers used in step b).

35 6. The process as claimed in any one of the preceding claims, characterized in that the joining operation of step b) is carried out under vacuum.

7. The process as claimed in the preceding claim, characterized in that the joining operation is carried out by bonding at ambient temperature.

5 8. The process as claimed in the preceding claim, characterized in that it includes a step c) consisting in annealing, at between 400 and 1000°C, the microstructure obtained after step b) so as to strengthen the bond.

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9. The process as claimed in any one of Claims 2 to 8, characterized in that the other material that can also absorb the residual gases in the cavity consists of titanium.

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10. The process as claimed in any one of the preceding claims, characterized in that the second wafer and/or the intermediate wafer are made of silicon or glass.

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11. The process as claimed in any one of the preceding claims, characterized in that it is applied collectively to several microstructures.

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12. A microstructure containing a vacuum cavity, characterized in that it comprises at least two wafers that contribute to bounding the cavity, one of said wafers, called the first wafer, being made of silicon and including a porous silicon region capable of absorbing residual gases in the cavity, the region being produced in the thickness of said silicon wafer.

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13. The microstructure as claimed in the preceding claim, characterized in that the porous silicon region is impregnated with another material that can also absorb residual gases in the cavity.

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14. The microstructure as claimed in the preceding claim, characterized in that the other material that

can also absorb residual gases in the cavity is titanium.

5 15. The microstructure as claimed in any one of claims 12 to 14, characterized in that the wafers other than the first wafer are made of silicon or glass, or a combination of silicon and glass.

10 16. The microstructure as claimed in any one of claims 12 to 15, characterized in that it includes a resonator housed in the cavity.

15 17. A sensor having a microstructure as claimed in any one of claims 12 to 16.

18. The sensor as claimed in the preceding claim, characterized in that the sensor is a resonant pressure sensor or a resonator accelerometer or a vibrating gyroscope or an electromechanical filter.